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Suzuki

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(54) **IMAGE PROCESSING APPARATUS, INFORMATION PROCESSING METHOD, AND PROGRAM**

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G06F 3/12 (2006.01)

(52) **U.S. Cl.**
CPC ***H04N 1/00928*** (2013.01); ***G06F 3/123*** (2013.01); ***G06F 3/1204*** (2013.01); ***G06F 3/1285*** (2013.01); ***H04N 1/00408*** (2013.01); ***H04N 1/00891*** (2013.01)

(58) **Field of Classification Search**
USPC 358/1.13, 1.14, 1.15; 712/220; 713/320
See application file for complete search history.

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(57) **ABSTRACT**

An image processing apparatus includes a registration unit configured to receive a necessity of a restart operation for reflecting setting values of setting data, from a processing execution unit for executing by using the setting data, and to register necessity information in each category corresponding to the processing execution unit, a determination unit configured to determine whether import data includes setting data related to a category registered as a category requiring a restart operation in the registration unit, and a determining unit configured to, based on a result of the determination by the determination unit, determine whether a restart operation is necessary after the import data has been imported.

11 Claims, 9 Drawing Sheets

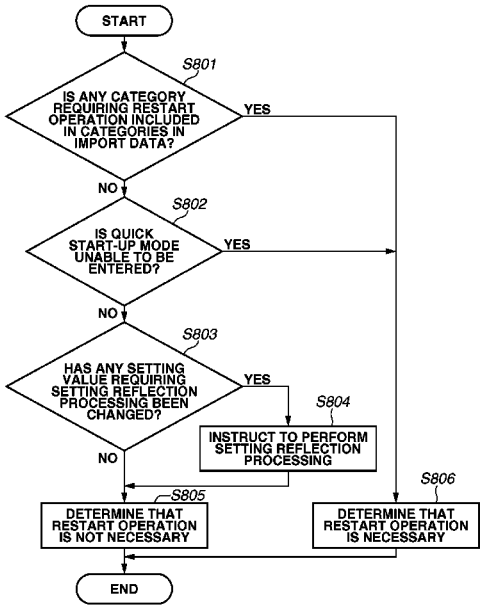

FIG.1

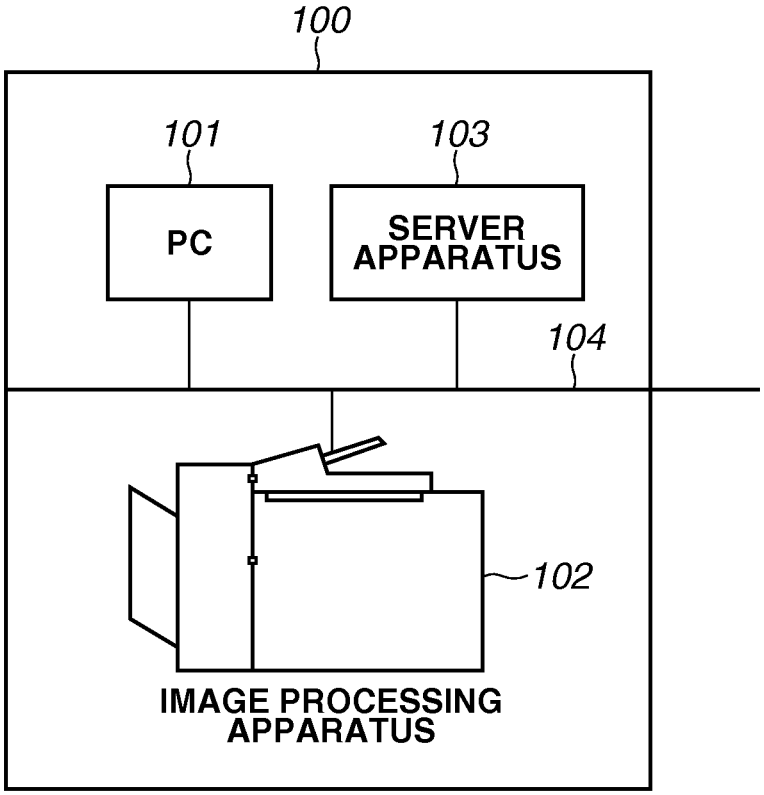
100
101
103
PC
SERVER APPARATUS
104
102
IMAGE PROCESSING APPARATUS

FIG.2A

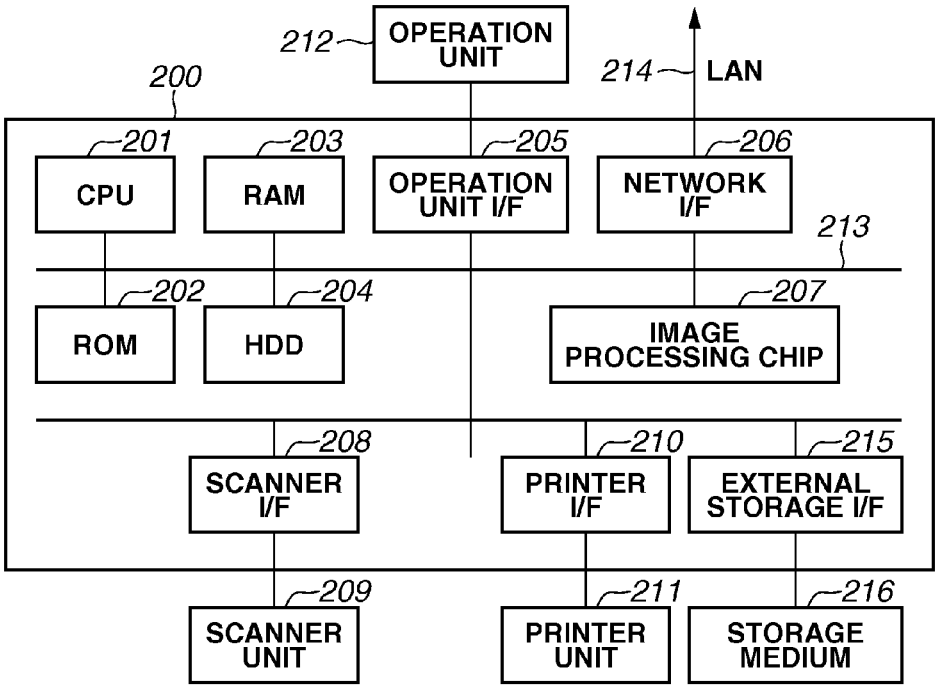
212
OPERATION UNIT
214
LAN
200
201
CPU
203
RAM
205
OPERATION UNIT I/F
206
NETWORK I/F
213
202
ROM
204
HDD
207
IMAGE PROCESSING CHIP
208
SCANNER I/F
210
PRINTER I/F
215
EXTERNAL STORAGE I/F
209
SCANNER UNIT
211
PRINTER UNIT
216
STORAGE MEDIUM

FIG.2B

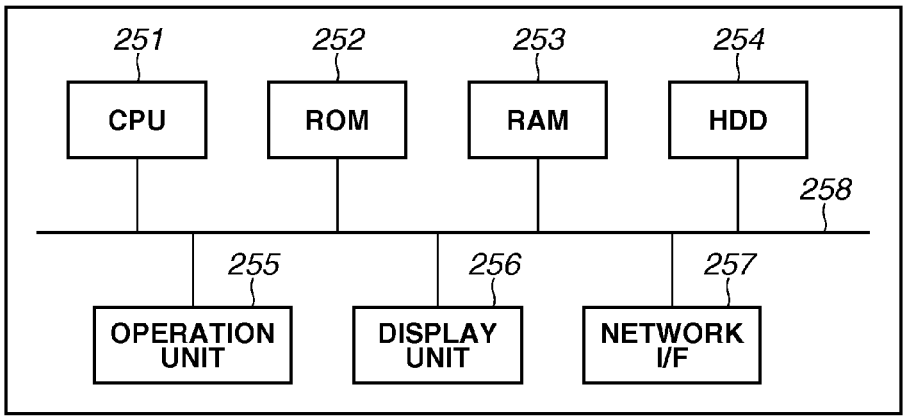
251
CPU
252
ROM
253
RAM
254
HDD
258
255
OPERATION UNIT
256
DISPLAY UNIT
257
NETWORK I/F

FIG.3

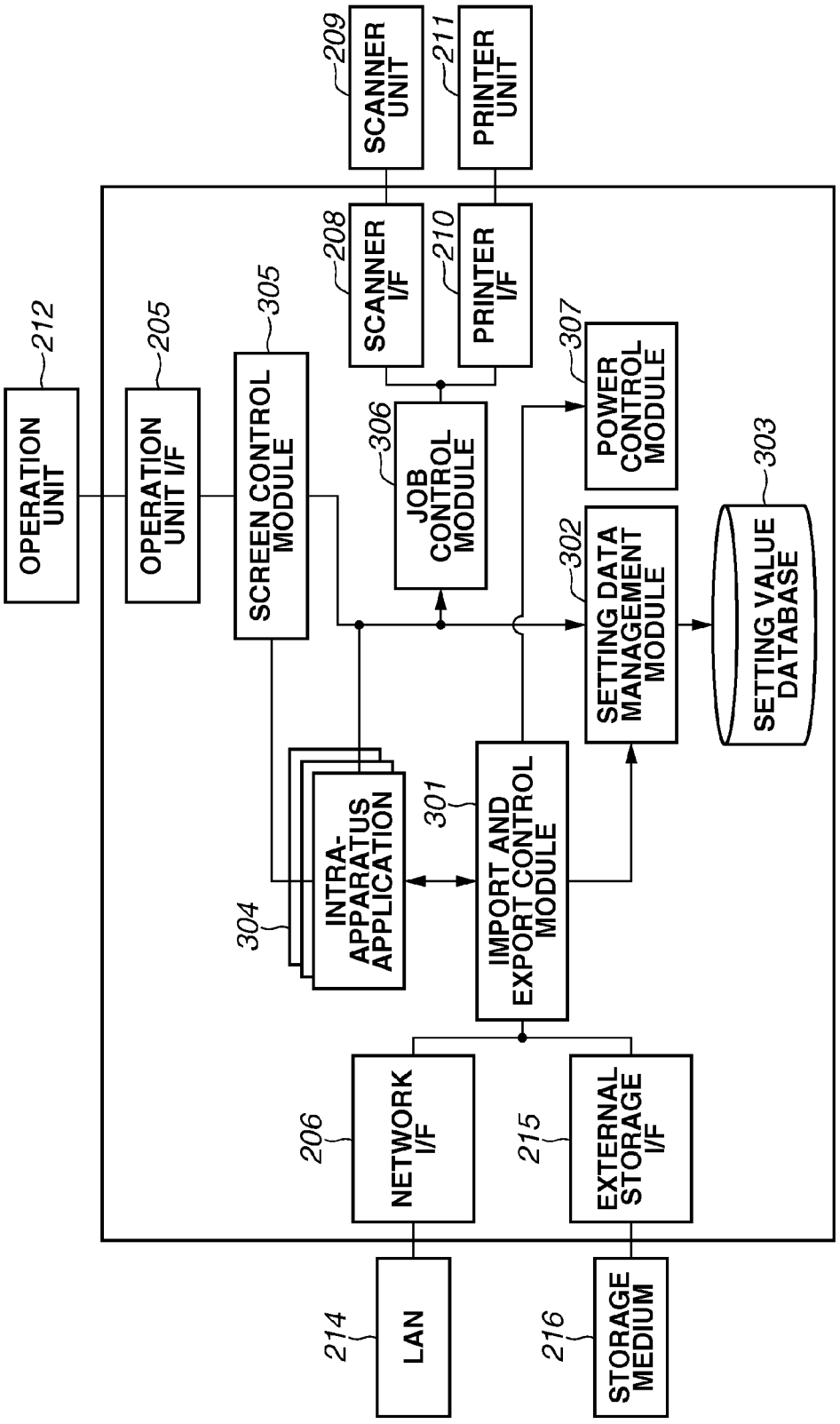
209
SCANNER UNIT
211
PRINTER UNIT
208
SCANNER I/F
210
PRINTER I/F
212
OPERATION UNIT
205
OPERATION UNIT I/F
305
SCREEN CONTROL MODULE
306
JOB CONTROL MODULE
307
POWER CONTROL MODULE
303
SETTING VALUE DATABASE
302
SETTING DATA MANAGEMENT MODULE
304
INTRA-APPARATUS APPLICATION
301
IMPORT AND EXPORT CONTROL MODULE
206
NETWORK I/F
215
EXTERNAL STORAGE I/F
214
LAN
216
STORAGE MEDIUM

FIG.4A

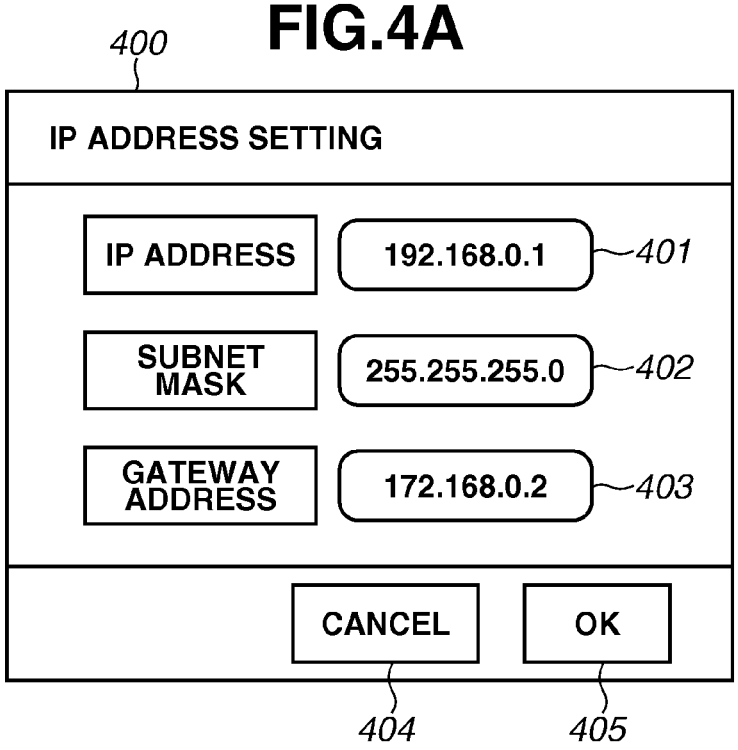
400
IP ADDRESS SETTING
IP ADDRESS
192.168.0.1
401
SUBNET MASK
255.255.255.0
402
GATEWAY ADDRESS
172.168.0.2
403
CANCEL
OK
404
405

FIG.4B

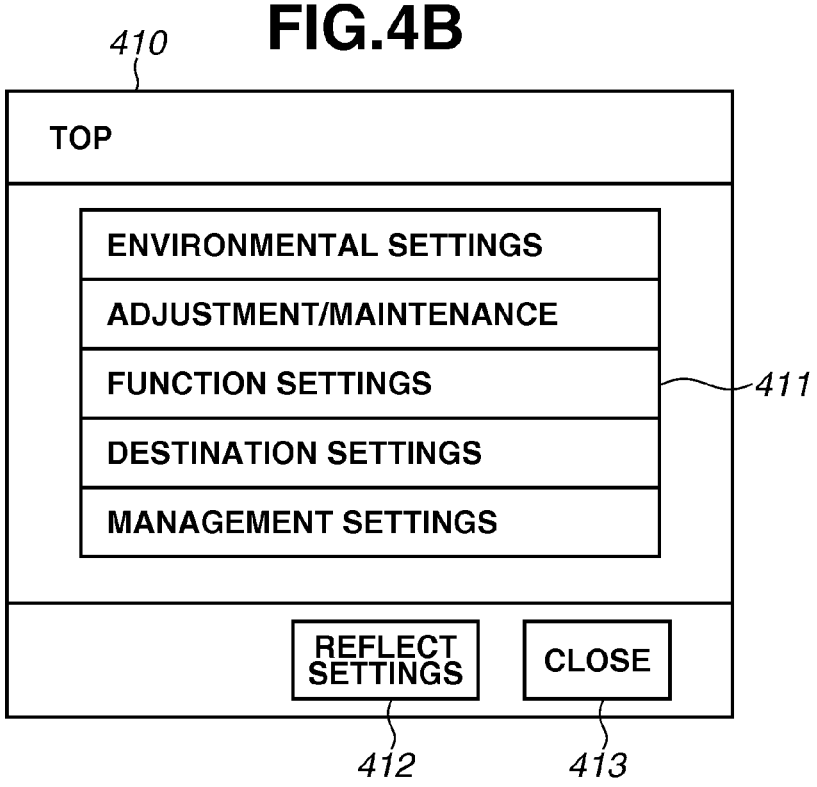
410
TOP
ENVIRONMENTAL SETTINGS
ADJUSTMENT/MAINTENANCE
FUNCTION SETTINGS
DESTINATION SETTINGS
MANAGEMENT SETTINGS
411
REFLECT SETTINGS
CLOSE
412
413

FIG.5A

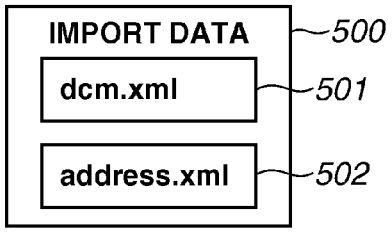

FIG.5B

503

```
<?xml version="1.0"?>
 <address_settings>
  <xml_file type="xml">address.xml</file>
 </address_settings>
```

FIG.5C

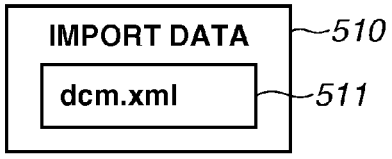

FIG.5D

512

```
<?xml version="1.0" encoding="UTF-8" ?>
<device_settings>
        <network_settings>
                <ipv4> true </ipv4>
                <ip_address> 192.168.0.1 </ip_address>
                <gw> 192.168.0.2 </gw>
                <dns> 192.168.0.4 </dns>
                <dhcp> false </dhcp>
                <ipv6> false </ipv6>
        </network_settings>
        <email_settings>
                <smtp_address> 192.168.1.1</smtp_address>
                <user> aaa </user>
                <password> xxx </password>
        </email_settings>
</device_settings>
```

FIG.6

CATEGORY (KEY)	NECESSITY OF RESTART OPERATION	
main_menu_settings	NECESSARY	~601
addresss_settings	NOT NECESSARY	~602
⋮	⋮	

FIG.7

FIG.7A	FIG.7B

FIG.7A

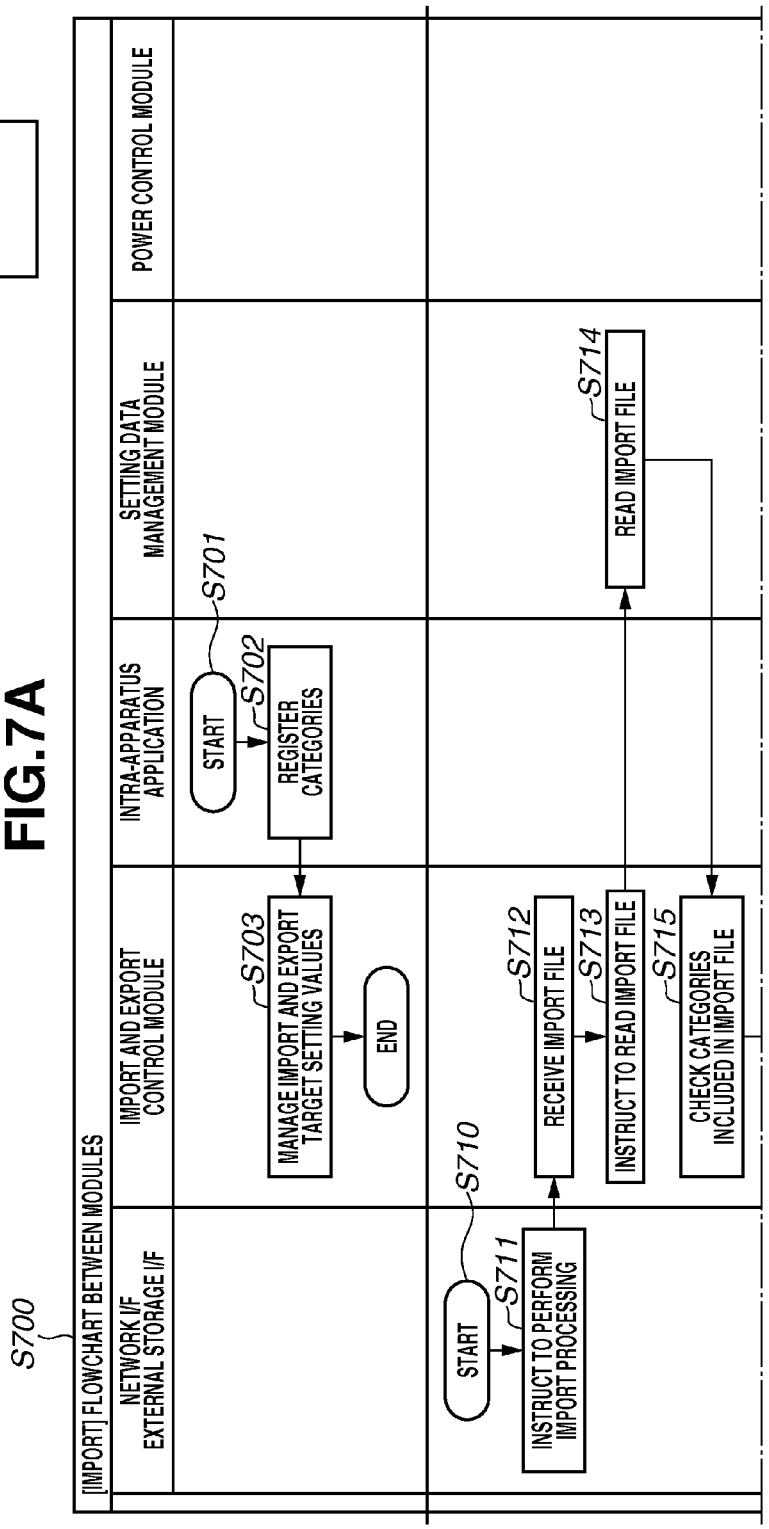

FIG.7B

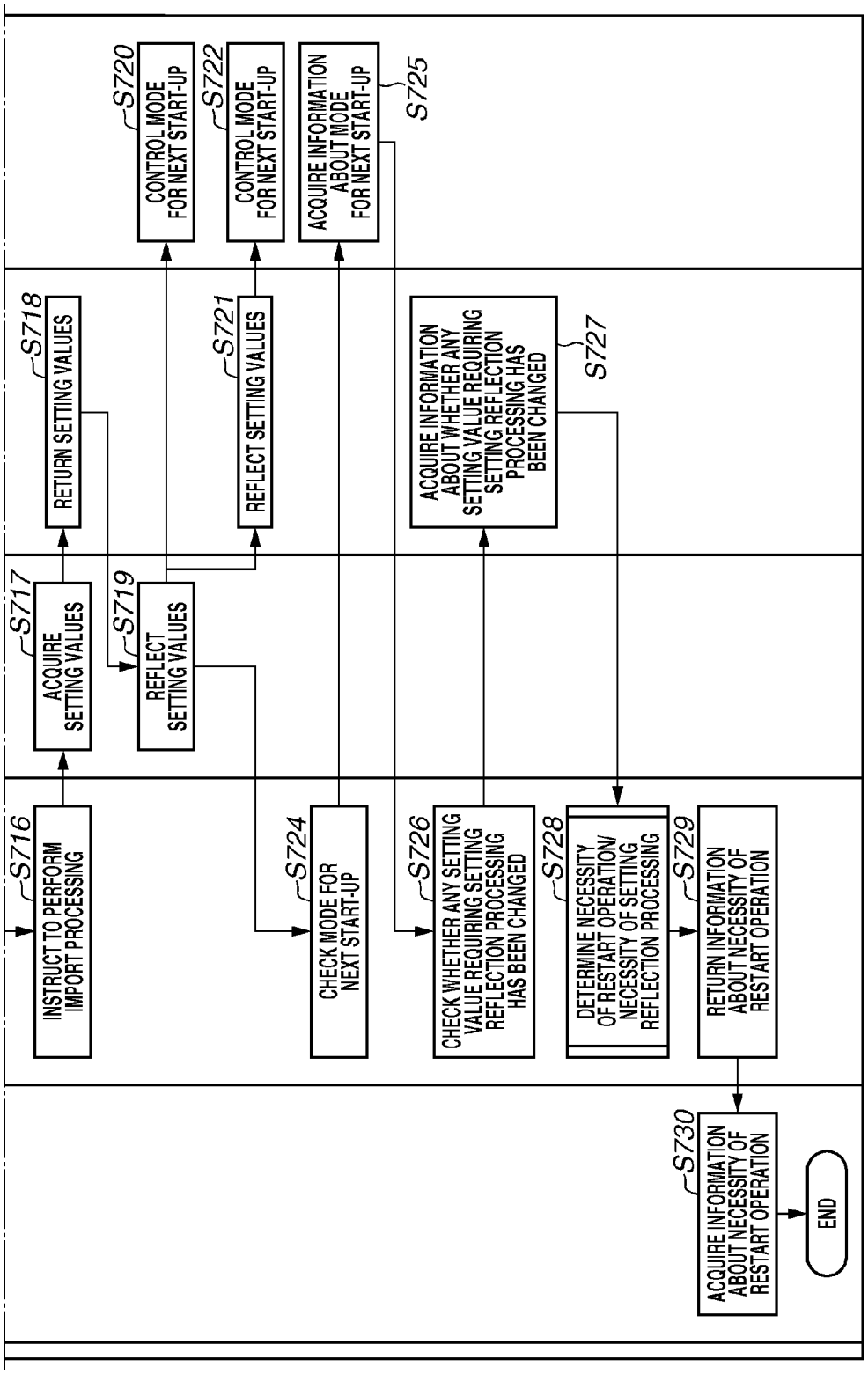
S716
INSTRUCT TO PERFORM IMPORT PROCESSING
S717
ACQUIRE SETTING VALUES
S718
RETURN SETTING VALUES
S719
REFLECT SETTING VALUES
S720
CONTROL MODE FOR NEXT START-UP
S721
REFLECT SETTING VALUES
S722
CONTROL MODE FOR NEXT START-UP
S724
CHECK MODE FOR NEXT START-UP
S725
ACQUIRE INFORMATION ABOUT MODE FOR NEXT START-UP
S726
CHECK WHETHER ANY SETTING VALUE REQUIRING SETTING REFLECTION PROCESSING HAS BEEN CHANGED
S727
ACQUIRE INFORMATION ABOUT WHETHER ANY SETTING VALUE REQUIRING SETTING REFLECTION PROCESSING HAS BEEN CHANGED
S728
DETERMINE NECESSITY OF RESTART OPERATION/ NECESSITY OF SETTING REFLECTION PROCESSING
S729
RETURN INFORMATION ABOUT NECESSITY OF RESTART OPERATION
S730
ACQUIRE INFORMATION ABOUT NECESSITY OF RESTART OPERATION
END

FIG.8

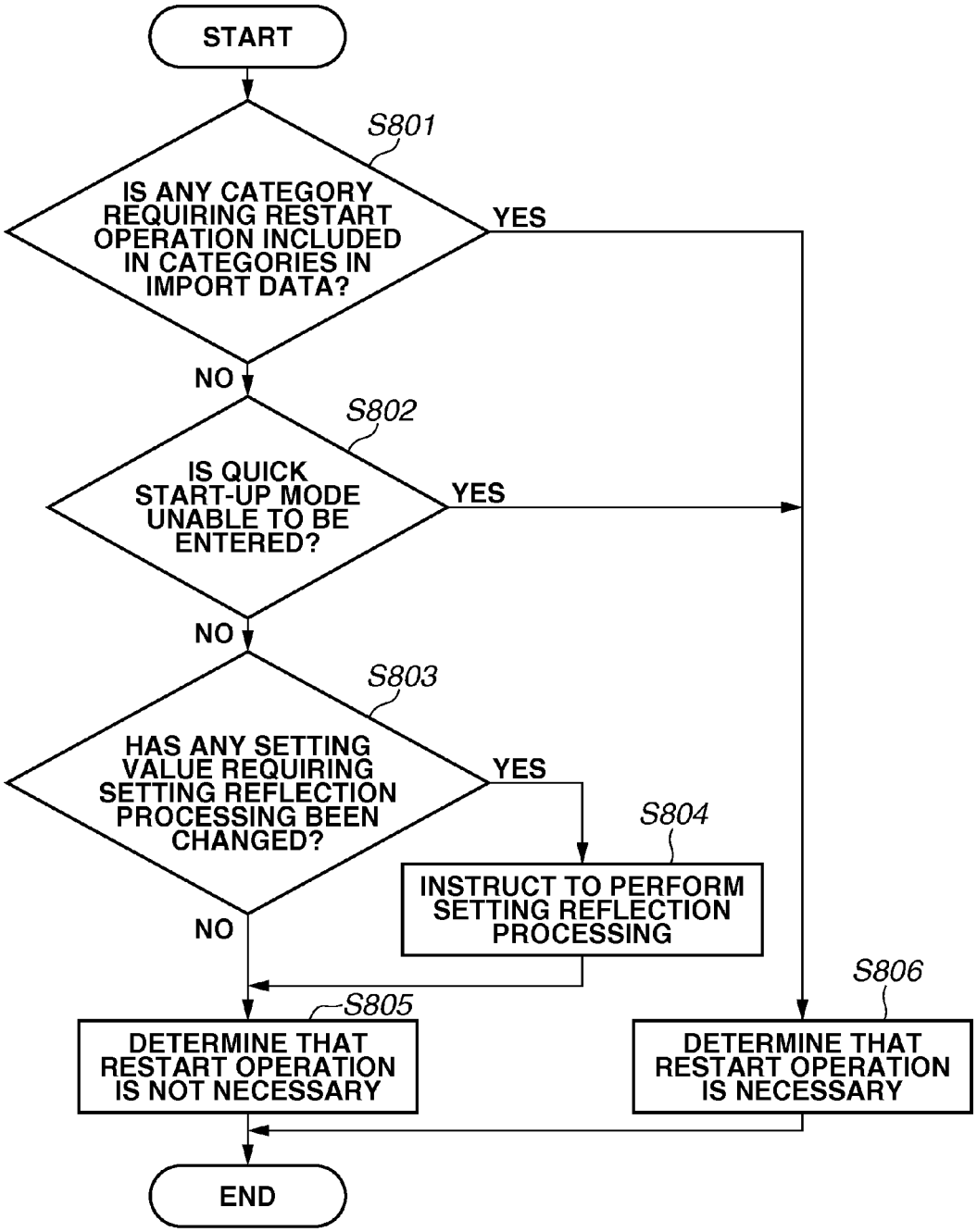
START
S801
IS ANY CATEGORY REQUIRING RESTART OPERATION INCLUDED IN CATEGORIES IN IMPORT DATA?
YES
NO
S802
IS QUICK START-UP MODE UNABLE TO BE ENTERED?
YES
NO
S803
HAS ANY SETTING VALUE REQUIRING SETTING REFLECTION PROCESSING BEEN CHANGED?
YES
NO
S804
INSTRUCT TO PERFORM SETTING REFLECTION PROCESSING
S805
DETERMINE THAT RESTART OPERATION IS NOT NECESSARY
S806
DETERMINE THAT RESTART OPERATION IS NECESSARY
END

IMAGE PROCESSING APPARATUS, INFORMATION PROCESSING METHOD, AND PROGRAM

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an image processing apparatus, an information processing method, and a program.

2. Description of the Related Art

In image processing apparatuses in recent years, improved multifunctionalization has increased the number of setting items. Manually setting image processing apparatuses one by one imposes a burden on an operator. Accordingly, there has been provided an image processing apparatus having a function of importing and exporting setting values (hereinafter this function is referred to as an import and export function). Thus, the work load on the operator can be reduced.

Setting values which can be set to an image processing apparatus include values which can be immediately reflected upon rewriting on an operation unit, and values which cannot be immediately reflected upon rewriting on the operation unit and can be reflected only after a restart operation. "Immediately reflected" means that, after the operator has changed any setting value, each function is immediately enabled according to the changed setting value.

If the operator imports setting values by using a setting value import function and the imported setting values are not reflected, a user may have a complaint. For this reason, the setting value import function is provided on the premise that a restart operation is necessary after the operator imports the values by using the setting value import function. However, since a restart operation is necessary even when the operator imports only a setting value which can be immediately reflected, the operator's working hours are increased.

Japanese Patent Application Laid-Open No. 2010-186228 discusses a technique for managing the setting values which require a restart operation, based on a table when using the setting value import function. In the technique, when a setting value is imported, the imported setting value is compared with a statically provided table. With this technique, the operator needs to perform a restart operation only when a setting value which requires a restart operation is imported.

In the technique discussed in Japanese Patent Application Laid-Open No. 2010-186228, it is necessary that the import and export function prestores setting values which require a restart operation, as a table. However, the method for storing setting values of the image processing apparatus may not be limited to a specific one.

More specifically, in addition to setting values managed by a module for managing all setting values, there may exist setting values managed in an application-specific format by an application which uses setting values. In this case, since there exist setting values which cannot be grasped, the import and export function cannot prestore setting values which require a restart operation, as the table. Therefore, there is a problem in that the necessity of a restart operation may not be determined in some cases, even if the import and export function statically manages the table.

Further, if the import and export function statically manages the table for determining the necessity of a restart operation, a certain problem arises. Specifically, the increase in the number of setting values of the image processing apparatus makes it necessary to correct the table managed by the import and export function, thus increasing the maintenance load.

SUMMARY OF THE INVENTION

The present invention is directed to providing a technique for reducing the work load on an operator when changing setting values through import processing.

According to an aspect of the present invention, an image processing apparatus includes a registration unit configured to receive a necessity of a restart operation for reflecting setting values of setting data from a processing execution unit for executing processing by the using setting data, and to register necessity information to each category corresponding to the processing execution unit, a determination unit configured to determine whether import data includes setting data related to a category registered as a category requiring a restart operation in the registration unit, and a determining unit configured to, based on a result of the determination by the determination unit, determine whether a restart operation is necessary after the import data has been imported.

Further features of the present invention will become apparent from the following description of exemplary embodiments with reference to the attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** illustrates an example system configuration.

FIGS. **2**A and **2**B illustrate example hardware configurations.

FIG. **3** illustrates an example software configuration.

FIGS. **4**A and **4**B illustrate example display screens for setting of setting values.

FIGS. **5**A, **5**B, **5**C, and **5**D illustrate example import data.

FIG. **6** illustrates an example of necessity of a restart operation for each category.

FIGS. **7**A and **7**B are a flowchart (**1**) illustrating example processing performed by an image processing apparatus.

FIG. **8** is a flowchart (**2**) illustrating example processing performed by the image processing apparatus.

DESCRIPTION OF THE EMBODIMENTS

Various exemplary embodiments, features, and aspects of the invention will be described in detail below with reference to the drawings.

Exemplary embodiments of the present invention will be described below with reference to the accompanying drawings.

<Definition of Terms>

First of all, terms used in the exemplary embodiments (described below) will be defined.

"Export" means an operation of an image processing apparatus to output information about setting values (hereinafter simply referred to as setting values) to the outside. For example, simply by importing setting values exported by any image processing apparatus to another image processing apparatus, a user can easily set setting values to another image processing apparatus.

"Export data" means setting values exported by an image processing apparatus. More specifically, export data includes setting values related to an address book and administrator settings, and setting values related to network settings.

"Import" means an operation of an image processing apparatus to acquire setting values from outside and reflect them.

"Import data" means setting values received by an image processing apparatus for the purpose of import. The above-described export data exported by any image processing

apparatus is identical to the above-described import data imported by another image processing apparatus by using the relevant export data.

A "category" means a unit of classification selectable by the user when an image processing apparatus exports setting values. For example, "Address Book" and "Main Menu Setting" are example categories. Categories will be described in detail below with reference to FIGS. **5** and **6**. "Quick start-up" means a start-up mode in which the image processing apparatus starts quicker than in the normal start-up mode. Usually, when the user turns OFF a seesaw switch, the power of the image processing apparatus turns OFF. Then, when the user turns the seesaw switch back ON, the image processing apparatus starts in the normal start-up mode. There is a mode for starting the image processing apparatus quicker than in the normal start-up mode (quick OFF mode to be described below). The image processing apparatus enters the quick OFF mode when the user turns OFF the seesaw switch. When the user turns OFF the power in the quick OFF mode, the image processing apparatus can be next time activated quicker than in the normal start-up mode.

"Quick OFF" means a state equivalent to the power OFF state, however, means a mode in which the image processing apparatus is maintained to be able to start next time in the above-described quick start-up mode. Although, in the quick OFF mode, the image processing apparatus does not receive a job, it keeps supplying the power to memory to enable starting next time in the quick start-up mode.

An application of the image processing apparatus can control the image processing apparatus not to enter the quick OFF mode via a module for managing power control for the image processing apparatus. In a state where the image processing apparatus cannot enter the "quick OFF" mode, when the user turns OFF the seesaw switch, the image processing apparatus will start next time in the normal start-up mode. When a restart operation is necessary to reflect setting values, setting values are not reflected on the image processing apparatus even after the user turns OFF the seesaw switch in the quick OFF mode and then turns it back ON.

This completes descriptions of terms. Terms other than the above-described ones will be suitably described below.

A first exemplary embodiment will be described below with reference to FIGS. **1** to **8**.

<Description of System Configuration>

The first exemplary embodiment will be described below. FIG. **1** illustrates an example configuration of a system **100** which includes an image processing apparatus **102** operating as an information processing apparatus.

The system **100** according to the present exemplary embodiment includes the image processing apparatus **102**, a personal computer (PC) **101**, a plurality of network apparatuses such as a server apparatus **103**, and a local area network (LAN) **104** to which the network apparatuses are connected. The image processing apparatus **102** operates even in an environment in which it is connected to a network via the LAN **104**, or in an environment in which it is not connected to a network and a universal serial bus (USB) memory is used to import and export data.

The image processing apparatus **102** can import and reflect setting values according to an import instruction from the PC **101** or the server apparatus **103**, or import and reflect setting values according to an import instruction from the user via the operation unit of the image processing apparatus **102**. The image processing apparatus **102** can export setting values set thereto to the PC **101** and the server apparatus **103**, and export setting values to a USB memory.

<Description of Hardware Configuration>

The hardware configuration of the image processing apparatus **102**, the PC **101**, and the server apparatus **103** in the present system will be described below with reference to FIGS. **2**A and **2**B.

FIG. **2**A illustrates an example hardware configuration of the image processing apparatus **102**.

A control unit **200** including a central processing unit (CPU) **201** totally controls the image processing apparatus **102**.

The CPU **201** reads and executes a control program stored in a read only memory (ROM) **202** to implement the software configuration of the image processing apparatus **102** and the processing related to flowcharts (described below).

The ROM **202** stores programs of the image processing apparatus **102**.

A random access memory (RAM) **203** serves not only as a system work memory for CPU **201** operation but also as a memory for temporarily storing image data. The RAM **203** includes a static RAM (SRAM) in which the stored contents are retained even after the power is turned OFF, and a dynamic RAM (DRAM) in which the stored contents are erased when the power is turned OFF.

A hard disk drive (HDD) **204** stores image data, various programs, and tables for various data.

An operation unit interface (I/F) **205** connects a system bus **213** and an operation unit **212**. The operation unit I/F **205** outputs to the system bus **213** image data to be displayed on the operation unit **212** and information input from the operation unit **212**.

The operation unit **212** is provided with a liquid crystal display (LCD) unit having a touch panel function, and a keyboard.

A network I/F **206** connects a local area network (LAN) **214** and the system bus **213** to input and output information.

A scanner I/F **208** edits (corrects and processes) image data received from the scanner unit **209**. The scanner I/F **208** determines whether the received image data is a color document, a monochrome document, a text document, or a photographic document. Then, the scanner I/F **208** adds the result of the determination to the image data. Information added to the image data by the scanner I/F **208** is referred to as attribute data.

A printer I/F **210** receives image data transmitted from an image processing chip **207**, and, by referring to the attribute data added to the image data, performs image formation on the image data.

The control unit **200** transmits the image data having undergone image formation to a printer unit **211** via the printer I/F **210**.

The printer unit **211** prints the image data transmitted from the control unit **200** on a recording medium.

An external storage I/F **215** connects with a storage medium **216**, and stores in the storage medium **216** data and images in the image processing apparatus **102**. The external storage I/F **215** reads data in the storage medium **216**, and stores it in the HDD **204** in the image processing apparatus **102**.

FIG. **2**B illustrates an example hardware configuration of the PC **101** and the server apparatus **103**.

The hardware configuration of the PC **101** will be described below.

A CPU **251** of the PC **101** controls the entire PC **101**. The CPU **251** of the PC **101** executes a program stored in a ROM **252** of the PC **101** to implement the processing of the PC **101**.

The ROM **252** of the PC **101** stores a program to be executed by the CPU **251** of the PC **101**.

A RAM **253** of the PC **101** serves not only as a system work memory for operation of the CPU **251** of the PC **101** but also as a memory for temporarily storing various data.

A HDD **254** of the PC **101** stores various programs and various data required by the PC **101** to perform processing.

An operation unit **255** of the PC **101** is a keyboard or a mouse which receive user operations. The operation unit **255** of the PC **101** may be integrated with a display unit having a touch panel function.

A display unit **256** of the PC **101** is a display for displaying information of the PC **101**. The display unit **256** of the PC **101** may be a touch panel integrated with the operation unit **255** of the PC **101**.

A network I/F **257** of the PC **101** connects the PC **101** and an external apparatus. The above-described apparatuses are mutually connected via a system bus **258**.

The hardware configuration of the server apparatus **103** is similar to that of the PC **101**, and redundant description thereof will be omitted. Specifically, the CPU **251** of the server apparatus **103** executes a program stored in the ROM **252** of the server apparatus **103** to implement the processing of the server apparatus **103**.

<Description of Software Configuration of Image Processing Apparatus **102**>

The software configuration of the image processing apparatus **102** will be described below with reference to FIG. **3**.

FIG. **3** illustrates an example software configuration of the image processing apparatus **102**.

FIG. **3** extracts and illustrates only software modules necessary to execute processing according to the present exemplary embodiment, out of software modules necessary to operate the image processing apparatus **102**.

An import and export control module **301** captures import data and generates export data. When performing export processing, the import and export control module **301** acquires intra-apparatus setting data stored in a setting value database **303** via a setting data management module **302**, and converts the data into an exportable format. Then, the import and export control module **301** transmits data to an external terminal via the network I/F **206**, and stores data in the storage medium **216** via the external storage I/F **215**. The database **303** and a plurality of storage apparatuses (such as HDDs) for storing data are collectively referred to as a database.

When performing import processing, the import and export control module **301** acquires import data via the network I/F **206** or the external storage I/F **215**. Then, the import and export control module **301** interprets the acquired import data, and stores the data in the setting value database **303** via the setting data management module **302**.

The setting data management module **302** is an access module for the setting value database **303**, and stores various parameters for apparatus control.

Each of intra-apparatus applications **304** performs copying, scanning, printing, image conversion, and data transmission and reception. An intra-apparatus application **304** acquires various setting information necessary to perform processing, from the setting value database **303** via the setting data management module **302**. Some of intra-apparatus applications **304** manage various setting information necessary to perform processing based on their own categories. Further, the intra-apparatus application **304** displays information on the operation unit **212** via a screen control module **305**, or displays on the operation unit **212** a screen for receiving an instruction from the user. When it is necessary to set or change a parameter, the intra-apparatus application **304** displays on the operation unit **212** a screen having a display form for prompting the user to input data, which is one of screen display forms stored in the screen control module **305**. Then, in response to a setting change request received from the user via the operation unit **212**, the intra-apparatus application **304** changes the contents of the setting value database **303** via the setting data management module **302**. Further, when performing job processing by using the scanner unit **209** and the printer unit **211**, the intra-apparatus application **304** instructs a job control module **306** to perform job processing. Each intra-apparatus application **304** is an example of a processing execution unit.

The job control module **306** operates the scanner unit **209** and the printer unit **211** via the scanner I/F **208** and the printer I/F **210** to perform scanning and printing, respectively. The job control module **306** acquires various setting information, such as parameters necessary to perform these processings, from the setting value database **303** via the setting data management module **302**.

A power control module **307** manages processing for controlling the power of the image processing apparatus **102**. More specifically, the power control module **307** controls shutdown processing and, manages the start-up mode in which the image processing apparatus **102** will start next time.

<Description of Setting Values which Requires Setting Reflection Processing>

FIGS. **4**A and **4**B illustrate example display screens for setting setting values.

FIG. **4**A illustrates an example display screen for setting an IP address.

A case where setting reflection processing is necessary after changing a setting value will be described below with reference to FIG. **4**A.

As example cases where setting reflection processing is necessary, cases where setting values of "IP ADDRESS", "SUBNET MASK", and "GATEWAY ADDRESS" are changed will be described below. In this case, the image processing apparatus **102** is assumed to display a display screen **400** on the operation unit **212**. It is assumed that an intra-apparatus application **304** has received inputs of an IP address (192.168.0.1) **401**, a subnet mask (255.255.255.0) **402**, and a gateway address (192.168.0.2) **403** via a user operation on the operation unit **212**, and then received a selection of an OK button **405** via a user operation on the operation unit **212**. In this case, via the setting data management module **302**, the intra-apparatus application **304** changes the relevant setting values stored in the setting value database **303** to the setting values input via the operation unit **212**.

However, an intra-apparatus application **304** which refers to the IP address, operates by referring to the IP address stored in the intra-apparatus application **304**. Therefore, the image processing apparatus **102** does not operate according to the setting values stored in the setting value database **303**.

FIG. **4**B illustrates an example display screen including a setting reflection button.

When the setting data management module **302** detects that any setting value which requires setting reflection processing has been changed, the image processing apparatus **102** displays on the operation unit **212** a display screen **410** including a "REFLECT SETTINGS" button **412**, as illustrated in FIG. **4**B. Upon reception of the selection of the "REFLECT SETTINGS" button **412** via a user operation on the operation unit **212**, the setting data management module **302** instructs the intra-apparatus application **304** which refers to network settings, such as the IP address, to reflect the relevant setting value.

When the intra-apparatus application **304** is instructed to reflect the setting values, it operates referring to the setting values stored in the setting value database **303**.

<Detailed Descriptions of Import Data>

Import data will be described in detail below with reference to FIGS. **5**A to **5**D.

FIGS. **5**A to **5**D illustrate example import data.

Import data of setting value categories managed in an application-specific format by an intra-apparatus application **304** will be described in detail below with reference to FIGS. **5**A and **5**B. For example, a case of "Address Book" which is a setting value category managed in an application-specific format by the intra-apparatus application **304** will be described below.

Import data **500** includes a file **501** which includes setting values managed by the setting data management module **302**, and a file **502** which includes setting values managed in an application-specific format by the intra-apparatus application **304**. The import data **500** includes as different files import data of setting value categories managed in an application-specific format by the intra-apparatus application **304**. The file **501** including the setting values managed by the setting data management module **302** has a description that the import data **500** includes the Address Book category. The file **501** further has a description that the import data **500** includes a setting value file **503** in an application-specific format related to an address book "address.xml" illustrated in FIG. **5**B.

Import data of setting value categories in the intra-apparatus application **304** using the setting values managed by the setting data management module **302** will be described below with reference to FIGS. **5**C and **5**D.

Import data **510** includes a file **511** which includes the setting values managed by the setting data management module **302**. The file **511** further includes setting values of import and export target categories in a format interpretable by the setting data management module **302**, as illustrated in FIG. **5**D.

Setting schemas are different between the setting values managed in an application-specific format by the intra-apparatus application **304** illustrated in FIGS. **5**A and **5**B, and the setting values managed by the setting data management module **302** illustrated in FIGS. **5**C and **5**D. Therefore, the import and export control module **301** cannot uniquely manage setting values.

<Description of Management of Import Target Categories>

FIG. **6** illustrates an example of the necessity of a restart operation for each of import and export target categories managed by the import and export control module **301**.

When the intra-apparatus application **304** activates the image processing apparatus **102** or itself, the intra-apparatus application **304** registers a "key" representing an import and export target setting value category to the import and export control module **301**. Further, when an intra-apparatus application **304** manages setting values which require a restart operation to reflect them when imported, the intra-apparatus application **304** registers the necessity of a restart operation in the import and export control module **301**.

For example, the setting values related to "Main Menu" require a restart operation to reflect them when imported. Therefore, the intra-apparatus application **304** managing "Main Menu" registers a key "main_menu_settings" that represents the main menu in the import and export control module **301**, and further notifies the import and export control module **301** of the necessity of a restart operation.

Setting values related to "Address Book" are reflected without requiring a restart operation when imported. Therefore, the intra-apparatus application **304** which manages "Address Book" registers a key "address_settings" that represents the address book in the import and export control module **301**.

The import and export control module **301** manages import and export target categories by associating keys registered as an import and export target with the necessity of a restart operation. When the key "main_menu_settings" is imported, the import and export control module **301** manages it as a setting value which requires a restart operation. When the key "address_settings" is imported, the import and export control module **301** manages it as a setting value not requiring a restart operation.

Processing performed by the image processing apparatus **102** will be described below with reference to FIG. **7**.

FIG. **7** is a flowchart illustrating example processing performed by the image processing apparatus **102**. Processing for registering import and export target setting values and import-related processing will be described in detail below.

<Processing for Registering Import and Export Target Setting Values>

Processing for registering import and export target setting values will be described below.

In step S**701**, the image processing apparatus **102** starts processing.

In step S**702**, when the intra-apparatus application **304** activates the image processing apparatus **102** or itself, the intra-apparatus application **304** registers setting value categories managed by it in the import and export control module **301** by using keys. Setting values registered by using keys in step S**702** are import and export target setting values. The present exemplary embodiment is directed to the import processing as described above. In the registration in step S**702**, when the intra-apparatus application **304** manages the setting values which are reflected only after a restart operation, the intra-apparatus application **304** registers the necessity of a restart operation together.

In step S**703**, based on the information registered by the intra-apparatus application **304**, the import and export control module **301** manages the setting values directed to the import and export.

The above-described processing enables the image processing apparatus **102** to manage the necessity of a restart operation for reflecting the setting values directed to the import and export, in consideration of the setting values managed in an application-specific format by the intra-apparatus application **304**.

<Import-related Processing>

Import-related processing will be described below.

In step S**710**, the image processing apparatus **102** starts the processing.

In step S**711**, according to an import instruction received from the user via the operation unit **212**, the network I/F **206** and the external storage I/F **215** instruct the import and export control module **301** to perform the import processing.

In step S**712**, the import and export control module **301** receives an import file via the network I/F **206** or the external storage I/F **215**. Upon reception of the import instruction, the import and export control module **301** instructs the job control module **306** to stop backup and restore processing other than the present processing and COPY job and FAX job processing.

In step S**713**, the import and export control module **301** instructs the setting data management module **302** to develop and read the import file received in step S**712** so as to analyze it.

In step S714, the setting data management module 302 develops and reads the import file on which the instruction has been received in step S713.

In step S715, the import and export control module 301 checks the categories included in the import file.

In step S716, the import and export control module 301 instructs the intra-apparatus application 304 to import the categories included in the import file checked in step S715.

In step S717, upon reception of the import instruction, the intra-apparatus application 304 acquires the setting values read by the setting data management module 302 in step S714. When setting values are managed in an application-specific format, the intra-apparatus application 304 acquires the file 502 having the application-specific format. Then, the intra-apparatus application 304 analyzes and reflects the acquired file 502. When any setting value which requires a restart operation to reflect it has been imported, the intra-apparatus application 304 notifies the power control module 307 of the impossibility of entering the quick OFF mode.

In step S720, upon reception of the notification, the power control module 307 performs control so that the quick OFF mode cannot be entered. Specifically, when the seesaw switch is turned OFF, the power control module 307 performs control so that the image processing apparatus 102 will be activated next time in the normal start-up mode, not in the quick start-up mode.

When the setting values used by the intra-apparatus application 304 are the setting values managed by the setting data management module 302, in step S719, the intra-apparatus application 304 instructs the setting data management module 302 to reflect the setting values. In this case, the setting data management module 302 has returned the setting values to the intra-apparatus application 304 in step S718.

In step S721, in response to the relevant instruction of the intra-apparatus application 304, the setting data management module 302 reflects the specified setting values on the setting value database 303. It is assumed that the setting values which require a restart operation are included in the setting values reflected on the setting value database 303 in step S721. After the setting data management module 302 has changed any setting value of the setting value database 303, then in step S722, the power control module 307 performs control so that the image processing apparatus 102 cannot enter the quick OFF mode.

After completion of the import processing by the intra-apparatus application 304, then in step S724, the import and export control module 301 instructs the power control module 307 to check whether the quick start-up mode can be entered.

In step S725, the power control module 307 acquires information about the start-up mode in which the image processing apparatus 102 will be started next time, and notifies the import and export control module 301 of the relevant information.

In step S726, in the above-described import processing, the import and export control module 301 instructs the setting data management module 302 to check whether any setting value which requires setting reflection processing has been changed. In step S727, the setting data management module 302 acquires the information about whether any setting value which requires setting reflection processing has been changed. For example, a case where a setting value, such as "IP ADDRESS", has been changed and the "REFLECT SETTINGS" button 412 is displayed, as illustrated in FIGS. 4A and 4B, is a case where setting reflection processing is necessary.

In step S728, the import and export control module 301 determines the necessity of a restart operation in the import processing. Processing in step S728 will be described in detail below with reference to FIG. 8.

In step S729, the import and export control module 301 returns information about the necessity of a restart operation determined in step S728 to the I/F from which the import instruction has been received.

In step S730, the network I/F 206 and the external storage I/F 215 acquire the information about the necessity of a restart operation. The network I/F 206 and the external storage I/F 215 are the above-described network I/F 206 and external storage I/F 215 from which the import instruction has been received. When the information about the necessity of a restart operation acquired in step S730 indicates that a restart operation is necessary, the image processing apparatus 102 displays a message for prompting a restart operation on the operation unit 212 and a UI of the apparatus from which the import instruction has been received. Thus, the user can check the necessity of a restart operation.

The above-described processing enables the image processing apparatus 102 to suitably determine the necessity of a restart operation for reflecting the setting values to be imported and perform the import processing, even in a case where setting values are managed in an application-specific format by the intra-apparatus application 304.

<Processing for Determining Necessity of Restart Operation and Necessity of Setting Reflection Processing>

The above-described processing in step S728 illustrated in FIG. 7 will be described in detail below with reference to FIG. 8.

FIG. 8 is a flowchart illustrating example processing for determining the necessity of a restart operation, and example processing for determining the necessity of setting reflection processing.

In step S801, the import and export control module 301 determines whether any category which requires a restart operation is included in the categories in the import data read in step S714. More specifically, the import and export control module 301 compares each key included in the import data with the key registered by each intra-apparatus application 304 in step S703. Then, the import and export control module 301 determines whether any key included in the import data is registered as a key requiring a restart operation after the import processing. When the import and export control module 301 determines that any category requiring a restart operation is included in the import data (YES in step S801), the processing proceeds to step S806. On the other hand, when the import and export control module 301 determines that any category requiring a restart operation is not included in the import data (NO in step S801), the processing proceeds to step S802.

In step S806, the import and export control module 301 determines that a restart operation is necessary.

In step S802, based on the result of the determination acquired in step S724, the import and export control module 301 determines whether the quick start-up mode cannot be entered. When the import and export control module 301 determines that the quick start-up mode cannot be entered (YES in step S802), the processing proceeds to step S806. On the other hand, when the import and export control module 301 determines that the quick start-up mode can be entered (NO in step S802), the processing proceeds to step S803. The processing in step S802 is example processing for determining the method for starting up the image processing apparatus 102. Thus, the image processing apparatus 102 can also determine the necessity of a restart operation in consideration of the method for starting up the image processing apparatus 102 next time. The processing in step S801 and the processing

in step S802 do not need to be performed together. Only one of the processings may be performed.

In step S803, based on the result of the determination acquired in step S726, the import and export control module 301 determines whether any setting value which requires setting reflection processing has been changed by the import processing. When the import and export control module 301 determines that any setting value which requires setting reflection processing has been changed (YES in step S803), the processing proceeds to step S804. On the other hand, when the import and export control module 301 determines that any setting value which requires setting reflection processing has not been changed (NO in step S803), the processing proceeds to step S805.

In step S804, the import and export control module 301 instructs the setting data management module 302 to perform setting reflection processing.

In step S805, the import and export control module 301 determines that the restart operation is not necessary, and the processing exits this flowchart. Specifically, when the import and export control module 301 determines that a restart operation is not necessary, and that any setting value which requires setting reflection processing has not been changed in the processing in steps S801, S802, and S803, the import and export control module 301 determines that a restart operation is not necessary.

The above-described processing enables the image processing apparatus 102 to determine whether a restart operation needs to be performed after setting values have been imported. With the above-described processing, the user does not need to perform an unnecessary restart operation. Thus, it becomes possible to improve the import processing efficiency and reduce the work load.

<Other Exemplary Embodiments>

The present invention can also be achieved by performing the following processing. Specifically, software (programs) for implementing the functions of the above-described exemplary embodiments is supplied to a system or an apparatus via a network or various storage media, and a computer (or a CPU or a microprocessor unit (MPU)) of the system or apparatus reads and executes the programs.

According to each of the above-described exemplary embodiments, when the user imports setting values to the image processing apparatus 102, the image processing apparatus 102 can determine the necessity of a restart operation for reflecting the setting values, in consideration of the setting values managed in an application-specific format by the intra-apparatus application 304. Therefore, the user does not need to perform an unnecessary restart operation. Further, even in a case where the number of setting values has increased through the import processing, the user does not need to change a setting value table managed by the image processing apparatus 102, thus improving maintainability. Therefore, it is possible to provide a technique for reducing the work load on the operator when changing the setting values through the import processing.

While the present invention has specifically been described based on the above-described exemplary embodiments, the present invention is not limited thereto but can be modified in diverse ways within the ambit of the appended claims.

According to the present invention, it is possible to provide a technique for reducing the work load on the operator when changing the setting values through the import processing.

While the present invention has been described with reference to exemplary embodiments, it is to be understood that the invention is not limited to the disclosed exemplary embodiments. The scope of the following claims is to be accorded the broadest interpretation so as to encompass all such modifications and equivalent structures and functions.

This application claims the benefit of Japanese Patent Application No. 2013-178154 filed Aug. 29, 2013, which is hereby incorporated by reference herein in its entirety.

What is claimed is:

1. An image processing apparatus comprising:
- a registration unit configured to register, for each of a plurality of categories of setting data, whether a restart operation of the image processing apparatus is required after setting of setting data;
- an acquisition unit configured to acquire setting data to be set to the image processing apparatus;
- a setting determination unit configured to determine whether the acquired setting data includes setting data related to a category registered as a category requiring a restart operation in the registration unit;
- a setting unit configured to set the acquired setting data; and
- a restart determining unit configured to determine whether the restart operation of the image processing apparatus is required in a case where the setting determination unit determines that the acquired setting data includes the setting data related to the category registered as the category requiring the restart operation, and determine whether the restart operation of the image processing apparatus is not required in case where the setting determination unit determines that the acquired setting data does not include the setting data related to the category registered as the category requiring the restart operation.

2. The image processing apparatus according to claim 1, further comprising:
- a start-up method determination unit configured to determine whether a method for starting up the image processing apparatus next time after the import is performed, is a first start-up method involving a restart operation or a second start-up method not involving a restart operation,
- wherein, based on the result of the determination by the setting determination unit and a result of the determination by the restart determination unit, the restart determining unit determines whether a restart operation is necessary.

3. The image processing apparatus according to claim 1, further comprising:
- a display unit configured to, when the restart determining unit determines that a restart operation is necessary, display a screen for a restart instruction on an operation unit.

4. The image processing apparatus according to claim 1, further comprising:
- an instruction unit configured to, when the restart determining unit determines that a restart operation is not necessary, instruct a setting data management unit to reflect changed setting data.

5. The image processing apparatus according to claim 1, wherein, upon reception of a necessity of a restart operation for reflecting setting values of setting data, from an application functioning as a processing execution unit for executing by using the setting data, the registration unit registers necessity information in each category corresponding to the application.

6. An information processing method performed by an image processing apparatus, the method comprising:
- registering, for each of a plurality of categories of setting data, whether a restart operation of the image processing apparatus is required after setting of setting data;

acquiring setting data to be set to the image processing apparatus;

determining whether the acquired setting data includes setting data related to a category registered as a category requiring a restart operation;

setting the acquired setting data; and

determining whether the restart operation of the image processing apparatus is required in a case where it is determined that the acquired setting data includes the setting data related to the category registered as the category requiring the restart operation, and determining whether the restart operation of the image processing apparatus is not required in case where it is determined that the acquired setting data does not include the setting data related to the category registered as the category requiring the restart operation.

7. The image processing method according to claim **6**, further comprising:

determining whether a method for starting up the image processing apparatus a next time after the import is performed, is a first start-up method involving a restart operation or a second start-up method not involving a restart operation,

wherein, the determining whether a restart operation is necessary, is determined based on the result of (1) the determining whether the acquired setting import data includes setting data related to a category registered as a category requiring a restart operation, and (2) the result of the start-up method determination.

8. The image processing method according to claim **6**, further comprising:

displaying, when it is determined that a restart operation is necessary, a screen for a restart instruction on an operation unit.

9. The image processing method according to claim **6**, further comprising:

managing the setting data, and issuing an instruction for reflecting changed setting data, when it is determined that a restart operation is unnecessary.

10. The image processing method according to claim **6**, wherein, in the registering, upon reception of a necessity of a restart operation for reflecting setting values of setting data, from an application for the execution of processing by using the setting data, necessity information is registered in each category corresponding to the application.

11. A non-transitory storage medium storing a program for causing a computer to execute a method comprising:

registering, for each of a plurality of categories of setting data, whether a restart operation of the image processing apparatus is required after setting of setting data;

acquiring setting data to be set to the image processing apparatus;

determining whether the acquired setting data includes setting data related to a category registered as a category requiring a restart operation;

setting the acquired setting data; and

determining whether the restart operation of the image processing apparatus is required in a case where it is determined that the acquired setting data includes the setting data related to the category registered as the category requiring the restart operation, and determining whether the restart operation of the image processing apparatus is not required in case where it is determined that the acquired setting data does not include the setting data related to the category registered as the category requiring the restart operation.

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